

1 TITLE OF THE INVENTION AND INTRODUCTORY PORTION

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3 37 C.F.R. 1.77(a)(3)
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7 Title: METHOD OF TRACKING PARTICIPANTS' BEHAVIOR IN A
8 COMPUTERIZED DATING OR MATCHMAKING SERVICE TO
9 DETERMINE UNDERLYING FEATURE PREFERENCES THAT ARE USED
10 TO RANK MATCHES BASED ON LEVEL OF COMPATIBILITY
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35 CROSS REFERENCE TO RELATED APPLICATIONS

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37 37 C.F.R. 1.77
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40 This application is related to and claims priority from
41 U.S. Provisional Patent Application 60/237.546, filed
42 September 30, 2000.
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1
2 **BACKGROUND OF THE INVENTION**
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5 **37 C.F.R. 1.77(a)(7)**
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8 **1. Field of Invention**
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10 This invention relates to methods of providing an
11 ordered list of matches for a participant in a computerized
12 dating or matchmaking service, based on identification of the
13 participant's preferred qualities for compatibility through
14 observation of the participant's behavior and choices while
15 using the service.
16
17

18 **2. Description of the Related Art**
19

20 Numerous methods and strategies have been developed
21 through history for matching people for marriage, dating and
22 friendship. In many cultures, the matchmaker has been and
23 still is an integral and accepted means to meet others for
24 marriage and companionship.
25

26 In contemporary society, cultural and demographic
27 changes have made it increasingly difficult for individuals
28 to meet and date other like-minded individuals. This is so
29 due to factors such as increased work hours, increased

1 condemnation of relationships in the workplace and changes in
2 family and social structures.

3
4 Many services associated with introducing people to each
5 other have been developed to meet this need for example,
6 dating services, personal ads in newspapers or on the
7 Internet, computerized dating services, and the like.

8
9 The common methodology employed by all of these services
10 involves a subscriber providing personal data to the service,
11 which includes biographic and demographic information about
12 themselves as well as general biographic and demographic
13 information describing the type of person they want to be
14 matched with.

15
16 Computerized dating and matchmaking services commonly
17 further this methodology by then providing the subscriber
18 with a list of matches from simply cross-matching all of this
19 information. A score may or may not be associated with each
20 match on your list.

21
22 This methodology not only assumes that the subscriber
23 knows exactly what he or she is looking for in another
24 person, but it also assumes that the subscriber knows how to
25 rank these qualities in precisely the right order, if the
26 qualities are ranked at all, often all qualities are given
27 equal weight. Further, once this list of qualities and

1 ranking of qualities is set, the subscriber must manually
2 make adjustments to this biographic and demographic
3 information in order to produce different match results.

4
5 Another common methodology is that the participant will
6 make choices of who they want to contact from the list of
7 matches available to them. Participants may also be contacted
8 by other participants, and then must choose whether or not
9 they want to continue a correspondence. There is no
10 observation made by the system of these choices made by its
11 participants, and therefore no scoring adjustments can be
12 made to better reflect the subscriber's preferences.

13
14 By observing the participants' behavior in who they
15 choose, information can be stored by a computerized dating
16 system in order to learn about the individual making the
17 choices. The system can then intelligently and intuitively
18 assist the individual to more efficiently meet those
19 subscribers whom they want to meet, and to avoid those whom
20 they are not interested in meeting.

21
22 Through continual observation of the participants
23 choices, the system can build a list of matches for that
24 participant which is flexible in that it is continually self-
25 correcting and regenerating in order to best fit the
26 participant's needs. At any point in time, the resulting list

1 of matches incorporates and reflects all of the past history
2 of that participant's choices.

3
4 One significant benefit of using observation to generate
5 a ranking of a participant's matches, is that it saves the
6 trouble and difficulty of the person having to list and rank
7 every single quality that they are looking for.

8
9 A second benefit of an observant scoring system is that
10 it properly reflects the mutable nature of compatibility.
11 Perhaps the participant isn't sure what they're looking for.
12 The participant may have some subconscious agenda that he or
13 she is not aware of, or may simply changes his or her mind as
14 times goes on. Clearly, there is a tremendous advantage to
15 enabling the computerized dating system to identify and adapt
16 to a participant's changing needs and desires.

17
18 A third benefit of an observant scoring system is that
19 each participant can learn from the observations made by the
20 system. A list of the traits that have been favored by a
21 participant's selection and/or rejection of other
22 subscribers, and the degree of favor each trait has received,
23 can be made available to that participant. This list provides
24 a participant with feedback about his or her selection
25 behavior as well as knowledge that the system is doing its
26 part to find that participant the best possible match based

1 not only on the biographic and demographic information
2 provided, but also on his or her actual choices.

3
4 Accordingly, it is the primary purpose of this invention
5 to observe the selection and/or rejection behavior of the
6 participants of an Internet dating service and then utilize
7 that information to calculate compatibility scores between
8 all matching participants of the service.

9
10 Additional objects and advantages of the invention will
11 be set forth in the description that follows, and in part
12 will be obvious from the description, or may be learned by
13 practice of the invention. The objects and advantages of the
14 invention may be realized and obtained by means of the
15 instrumentalities and combinations particularly pointed out
16 in the appended claims.

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22 **BRIEF SUMMARY OF THE INVENTION**

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24 **37 C.F.R. 1.77(a)(8)**

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26
27 This invention provides a method for observing, matching
28 and ranking potential dating partners within a computerized
29 dating or matchmaking service. The method includes tracking

1 participants' behavior in a computerized dating or
2 matchmaking service to determine selection preferences that
3 are utilized to rank matches with other participants based on
4 level of compatibility. The method may be used in an Internet
5 dating service, computer dating service, or other matchmaking
6 services by creating personal profiles by a first and a
7 second participant; selecting or rejecting the second
8 participant for communication by the first participant; and
9 calculating a compatibility score between the first
10 participant and the second participant and/or a plurality of
11 other participant's by comparing the first participants'
12 statistics as determined by choices made by the first
13 participant with the second participant and/or the plurality
14 of other participants.

15
16 The methodology of this invention may also be used in
17 other matching or matchmaking activities such as:

18
19 Matching professional services with clients, and vice
20 versa: The invention could rank potential service providers
21 (such as doctors, lawyers, realtors, investment advisors,
22 etc.), for someone seeking the service, or could help a
23 professional service provider identify an ideal client by
24 ranking prospects.

25 Matching potential employers and employees: same as above.

26 Ranking products and services: based on observation of
27 what features a buyer tends to favor in a television set,

1 book, CD, massage therapist or any other product or service,
2 the system could rank all available products or services from
3 most to least preferable, or make purchase recommendations.

4
5 Helping users to find business partners, activity
6 partners, housemates, friends, etc., and providing movie and
7 restaurant recommendations and selection services.

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12 **DETAILED DESCRIPTION OF THE INVENTION**

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14 **37 C.F.R. 1.77(a)(10)**

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16
17
18 Reference will now be made in detail to the present
19 preferred embodiments of the invention as illustrated in the
20 accompanying drawings.

21
22 For clarity and understanding of the disclosed
23 methodology the following definitions apply throughout the
24 disclosure and are descriptive for elements of the preferred
25 and alternate embodiments.

26
27 Definition of a Match: Two participants are considered a
28 match when the first participant meets all requirements for
29 compatibility indicated by the second participant, and the

1 second participant meets all requirements for compatibility
2 indicated by the first participant, or when a single
3 participant indicates a match choice.

4
5 Ranking of a Match: Matches can be ranked by degree of
6 compatibility, as is determined by the requirements for
7 compatibility set forth by both participants and further
8 determined by observation of the behaviors and choices of
9 both participants using the service.

10
11 Definition of Contact: A participant initiates contact
12 with another participant via email or within the service.
13 Initiating contact is considered to be a selection by
14 indication of interest and is observed as such. For the
15 purposes of this invention, this contact may also include a
16 section that prompts the second participant to indicate
17 interest or non-interest in the first participant. The first
18 participant may receive a notification of this interest via
19 email. The first participant may also receive a notification
20 when he or she next signs on to the dating service.

21
22 In accordance with the present invention there is
23 provided a method of tracking participants' behavior in a
24 computerized dating or matchmaking service, such as an
25 Internet dating service, to determine selection preferences
26 that are utilized to rank matches with other participants
27 based on level of compatibility, comprising; creating

1 personal profiles by a first and a second participant;
2 selecting or rejecting or expressing an interest in the
3 second participant for communication by the first
4 participant; and calculating a compatibility score between
5 the first participant and the second participant and/or a
6 plurality of other participant's by comparing the first
7 participants' statistics as determined by choices made by the
8 first participant with the second participant and/or the
9 plurality of other participants.

10
11 The present methodology preferably includes the
12 following steps:

13
14 1. Each participant fills out a personal profile consisting
15 of biographic and demographic information about him or
16 herself. He or she may also provide general biographic and
17 demographic information describing the type of person he/she
18 wants to be matched with.

19
20 2. A scoring weight is calculated for each question in the
21 participant's individual profile. This scoring weight may be
22 based on the biographic and demographic information provided.
23 It may also be set initially to a previously determined
24 default value.

25
26 3. A match score for each question is calculated between
27 participants:

1
2 3a. The first participant's match history or talleyfor each
3 question may be compared with the second participant's
4 response to the same question, the result being used to
5 calculate the match score. Alternatively, the first
6 participant's response to the question may be compared with
7 the second participant's response to the question, the result
8 being used to calculate the score.

9
10 3b. The resulting match score for the question reflects both
11 the results of the comparison and also the scoring weights of
12 each participant for that question.

13
14 3c. The system may store a single match score for both
15 participants for that question. Alternatively, the system may
16 store a separate match score for each participant for each
17 question, and then combine these two scores to arrive at the
18 match score for both participants for that question.

19
20 3d. A total match score for the two participants is then
21 calculated by adding the match scores for both participants
22 of all of the individual questions.

23
24 4. A first participant views a second participant's
25 profile, or receives contact from said second participant,
26 and indicates that he or she is interested in said second
27 participant:

1
2 4a. The first participant may indicate interest while
3 viewing the second participant's profile on the computerized
4 matchmaking system. The second participant may receive a
5 notification of this interest via email. The second
6 participant may also receive a notification when he or she
7 next signs on to the dating service.

8
9 4b. The first participant may indicate interest when
10 prompted to respond interested or not interested to an
11 initial contact from the second participant. The second
12 participant may receive a notification of this interest via
13 email. The second participant may also receive a notification
14 when he or she next signs on to the dating service.

15
16 4c. If the first participant chooses to initiate contact
17 with the second participant, via email or within the service,
18 this is considered to be an indication of interest and is
19 observed as such.

20
21 4d. If the first participant chooses to respond, via email
22 or within the service, to contact initiated by the second
23 participant, this is considered to be an indication of
24 interest and is observed as such.

25
26 4e. The first participant's indication is observed and the
27 scoring weights of the first participant for each question

1 are increased to reflect the second participant's response to
2 the same question.

3
4 4f. The first participant's scoring weights are stored in
5 the system.

6
7 4g. The system may also store a tally for the first
8 participant for each possible response to each question, and
9 may increase the tally for responses that match those made by
10 the second participant for those same questions.

11
12 5. Alternatively, a first participant views a second
13 participant's profile, or receives contact from said second
14 participant by email or other means, and indicates that he or
15 she is not interested in said second participant:

16
17 5a. The first participant may indicate non-interest or
18 rejection while viewing the second participant's profile on
19 the computerized matchmaking system. The second participant
20 may receive a notification of this non-interest via email.
21 The second participant may also receive a notification when
22 he or she next signs on to the computerized dating service,
23 or when he or she next attempts to view said first
24 participant's profile.

25
26 5b. The first participant may indicate non-interest when
27 prompted to respond interested or not interested to an

1 initial contact from the second participant. The second
2 participant may receive a notification of this non-interest
3 via email. The second participant may also receive a
4 notification when he or she next signs on to the computerized
5 dating service, or when he or she next attempts to view said
6 first participant's profile.

7
8 5c. The first participant's indication is observed and the
9 scoring weights of the first participant for each question
10 are decreased to reflect the second participant's response to
11 the same question.

12
13 5d. The first participant's scoring weights are stored in
14 the system.

15
16 5e. The system may also store a tally for the first
17 participant for each possible response to each question, and
18 may decrease the tally for responses that match those made by
19 the second participant for those same questions.

20
21 6. The total match scores between participants are
22 periodically recalculated:

23
24 6a. Recalculation may take place on a scheduled basis.

25
26 6b. Recalculation may take place whenever the scores are
27 displayed.

1
2 6c. Recalculation may take place based on the occurrence of
3 one or more other frequently occurring events.

4
5 7. A list of responses to each question, showing the degree
6 of favor each response has received, is made available to
7 that participant:

8
9 7a. Favor is determined by the tally of a participant's
10 selection and/or rejection of other subscribers, using the
11 methods described above (4g, 5e).

12
13 7b. This list may include all question responses ordered by
14 degree of favor. Alternatively, the list may highlight only
15 particularly favored and/or particularly unfavored responses.

16
17 Preferably, compatibility score is created by comparing
18 a first person's statistics with the other participant's
19 profile answers and then comparing the other participant's
20 statistics with the first person's profile answers.
21 Statistics are tracked by keeping a tally of all possible
22 answers that can appear in a profile and then increasing them
23 when an answer matches the profile of a selected person or
24 decreasing them when an answer matches the profile of a
25 rejected person. Selection happens when one participant
26 chooses to contact another, or when a participant is
27 contacted by another participant and responded 'yes'.

1 Rejection happens when a participant indicates that he or she
2 is not interested in corresponding. This can happen when
3 looking at a list of prospects, an individual profile, or
4 when a participant receives and introduction or
5 communication.

6
7 In the preferred set-up and initialization when a new
8 user signs onto the computerized dating service, he or she
9 answers several multiple-choice questions. An example
10 question might be, "What is your religion," with possible
11 answers being Catholic, Jewish, Mormon, etc. Each answer
12 given by the user is stored in their personal profile. Some
13 questions will offer the option of responding "any or all of
14 the above."

15
16 The user's response to each question is stored in the
17 user's personal profile. The system stores these responses
18 by setting up a tally. That is, a number is stored for each
19 possible answer to each multiple-choice question. Initially,
20 each response NOT selected by the user to a question is
21 tallied as a negative 5 (this number is arbitrary, and merely
22 serves as a starting point). The selected response is given a
23 positive tally that exactly balances the sum of the tallies
24 for the non-selected answers. For example, if there are four
25 answers, each of the three non-selected answers is tallied as
26 negative 5, and the selected response is tallied as positive
27 15 (3 times 5). At all times, the total tally for all

1 answers to a question equals zero, because the positive
2 tallies exactly balance the negative tallies.

3
4 The user may also be asked to indicate what he or she is
5 looking for in another person, by answering the same
6 questions from that perspective. These responses are tallied
7 using the same method described in the previous paragraph.

8
9 At the completion of the sign-up procedure, the new user
10 has a profile which contains his or her responses to all of
11 the multiple choice questions. The profile may also include
12 photographs, video, and/or audio files, as well as responses
13 to non-multiple-choice questions. In this implementation,
14 only the multiple-choice responses are used for the purposes
15 of observation and ranking of matches.

16
17 All users who sign onto the service must first go
18 through the above procedure, and therefore each user of the
19 service, after signing on for the first time will have a
20 personal profile wherein are stored all of his or her
21 responses to the same questions.

22
23 When a user of the service wishes to view all of his or
24 her matches, a score is calculated between the user and each
25 match, representing the degree of compatibility for that
26 particular match, and then the matches may be ranked in
27 descending order based on their match scores. Each Score may

1 reflect the observations made on both parties. For example,
2 the score will represent the history of your behavior and the
3 history of the other person's behavior combined. The
4 assumption is that compatibility is a two-way system, and
5 what each person is looking for needs to be taken into
6 account.

7
8 The observation of a user's choices preferably comprise
9 when a first user indicates interest or non-interest in a
10 second user, this indication is observed, and adjustments are
11 made to the first user's values as follows:

12
13 When the first user indicates interest: for every
14 multiple-choice question in the first user's profile, the
15 tally column is increased that corresponds with the response
16 given to that question by the second user. This tally is
17 increased one unit for each other response to that question.
18 For example, if the second user chooses the "Catholic"
19 response to the religion question and there are 10 possible
20 answers, the tally stored for "Catholic" in the religion
21 question in the first user's profile is increased by 9 units.
22 All other columns for that question in the first user's
23 profile are decreased by one unit so that the sum of all
24 tallies for that question continues to equal zero.

25
26 When the first user indicates non-interest: for every
27 multiple-choice question in the first user's profile, the

1 tally column that corresponds with the response given to that
2 question by the second user is decreased in the same manner.
3 For example, if the second users chooses the "Catholic"
4 response to the above religion question, the tally stored for
5 "Catholic" in the religion question in the first user's
6 profile is decreased by 9 units. All other columns for that
7 question in the first user's profile are increased by one
8 unit so that the sum of all tallies for that question
9 continues to equal zero.

10
11 An indication of interest or non-interest is considered
12 an observed event. When either of these events take place,
13 'Observation' is increased by one, and the new number is
14 stored in the first user's profile.

15
16 The above process may take place the first time a first
17 user indicates interest or non-interest in a second user, or
18 it may happen every time the first user indicates interest or
19 non-interest in this second user. Alternatively, it may occur
20 on an intermittent basis.

21
22 Indication of interest or non-interest can take place in
23 a variety of ways. Some examples include:

24
25 - Viewing the second user's profile on the service, and
26 selecting an "interested" or "not interested" option at that
27 location.

1 - Sending the second user an email, or contacting him or her
2 through the service. This is considered an indication of
3 interest.

4 - Responding to an initial contact via email or through the
5 service from the second user. In this case, the option can
6 be presented, when this initial contact is delivered, to
7 select "interested" or "not interested." If no option to
8 indicate "not interested" is presented, or if the option is
9 presented but not selected, responding to the initial contact
10 will be considered an indication of interest.

11
12 In the preferred methodology a match score is calculated
13 between two members in the following way:

14
15 First, a match score is generated for each individual
16 question as follows:

17
18 The first user's tally column for the question,
19 corresponding with the second user's response to the same
20 question, is pulled. In other words, the number stored in the
21 first user's profile which represents that same response is
22 located. For example, if the question is "do you smoke," and
23 the second user's response is "no" from possible responses of
24 "yes, no, sometimes," the "no" column for the smoking
25 question is referenced in the first user's profile. In this
26 example, suppose the first user has the following values
27 stored for that question: yes = -10, no = 7, sometimes = 3.

1 The number 7 is pulled for the second user's "no" response.
2 We'll reference this first number as 'tally'.

3

4 Then, 'tally' is multiplied by the number of possible
5 responses to the question. In the smoking question example
6 above, there are 3 possible responses (yes, no, sometimes).
7 for example, this number may be referred to as
8 'possibilities'. This resulting product is divided by the sum
9 of the first user's positive tallies for that question. In
10 this example, the positive tallies (7 and 3) add up to 10.
11 This is called the 'tally range'.

12

13 The equation for calculating the match score for each
14 question for the first user, therefore, is 'tally' times
15 'possibilities' divided by 'tally range'

16

17 Once the first user's match score for this question is
18 calculated, the second user's match score is calculated for
19 the same question, by following the above steps and switching
20 the roles of the first and second user.

21

22 After both users' match scores have been calculated for
23 this question, the two match scores are added, this being the
24 combined match score for this question for these two users.

25

1 The combined match scores for these users for all
2 questions are added to find the total match score for the
3 match that consists of these two users.

4
5 In operation and use when viewing their respective match
6 lists, the first user and the second user preferably will
7 both show the same total match score for this match between
8 these two users. The match score may be represented as a
9 number. It may also be represented as a percentage of an
10 ideal score. It may also be represented as a "rating" (e.g.
11 "4 of 5 stars," or "Excellent").

12
13 Users can view all of their matches ranked in descending
14 order by score from most compatible to least compatible.

15
16 Users can also see how well the system is tracking their
17 choices by selecting to view their question response tallies.
18 After selecting this option, the user might see each question
19 with a list of the possible responses numbers or graphs
20 representing the current tallies for each response.

21
22 Alternatively, the user could just be shown the response
23 for each question with the highest current tally, or just the
24 responses for each question which have better-than-average
25 tallies.

1 Accordingly, present invention provides a method which
2 allows a user or other member of a computerized dating
3 service to keep track of preferences for other members
4 profile answers by updating personal statistics every time
5 the user either rejects or selects another member for
6 communication. The statistics are used as a weighting
7 mechanism for calculating a compatibility score between the
8 user and another participant. Unique and novel advantages of
9 the present invention include:

10
11 1. Participants may not know what they're looking for,
12 might be wrong about what they think they're looking for, or
13 might change their mind about what they're looking for. The
14 invention learns and figures it out based on observations of
15 their choices and actions. This creates a highly flexible,
16 adaptable, and intelligent ranking system.

17
18 2. Because the observations and adjustments happen to
19 everyone using the service, participants benefit from the
20 invention from the moment they join the service. Even without
21 making any choices him or herself, a participant will see his
22 or her matches ranked more accurately than if the invention
23 were not being used, because the choice history of everyone
24 he or she is matched with is also being taken into account
25 (if this invention were used to give book recommendations,
26 each book, though unable to itself make choices, could have a
27 feature tally history of the people who have purchased it in

the past). The assumption is that compatibility is a two way system, and what each person is looking for needs to be taken into account.

3. Observation of participant behavior and corresponding adjustments to the match rankings are made in the background, without any burden to the participant. The participant simply decides who he or she is and is not interested in.

4. By looking at the list of favored responses, participants can learn about the choices they are making. This helps participants to learn about themselves and their goals by seeing their own behavior patterns.

5. The invention gives participants confidence that the longer they participate, the better their results will be. The system provides an invisible hand to participants over time, to make it easier and easier to find the right match.

6. The invention relieves participants of some of the burden of identifying what they are looking for, thus making it easier for the participants to fill out their personal profiles.

7. Even if a user doesn't make contact with anybody, the system still figures out compatibility for that person. It observes this person's actions of non-interest in other

1 members. It also uses the information from other members to
2 create a compatibility score for that person.

3
4 As is evident from the above description, a wide variety
5 of data tracking applications and systems may be envisioned
6 from the disclosure provided. The methodology described
7 herein is applicable in any data processing system and
8 additional advantages and modifications will readily occur to
9 those skilled in the art. The invention in its broader
10 aspects is, therefore, not limited to the specific details,
11 representative apparatus and illustrative examples shown and
12 described. Accordingly, departures from such details may be
13 made without departing from the spirit or scope of the
14 applicant's general inventive concept.